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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,926	12/29/2000	Kazuhiro Takahashi	35.G2735	6871

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

NGUYEN, HUNG

ART UNIT PAPER NUMBER

2851

DATE MAILED: 10/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/749,926

Applicant(s)

TAKAHASHI ET AL.

Examiner

Hung Henry V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14 and 17 is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/29/00 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. 1. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi et al (U.S.Pat. 5,892,573).

With respect to claims 1, 8 and 12, Takahashi et al (fig.1) discloses an exposure apparatus and method comprising all basic features of the instant claims such as: a light source (1) comprises a pulse light; an illumination optical system (2, 3, 20-21, 5-8) for illuminating a predetermined pattern formed on reticle (R); a projection optical system (10) for projecting the pattern formed on the reticle onto a substrate (W); a first photodetector (12) disposed in a portion for receiving light from an optical path between the light source and a portion where the reticle is positioned for monitoring an emission light amount from the light source and light processing systems (102-103) for processing the detected signal from the first light quantity detector (12) and correcting the coefficient/output energy (see col.5, lines 65-67 and col.6, lines 1-5; col.7, lines 1-4).

With regard to claims 2-5, 7, 9-11, Takahashi et al further teaches the processing system further performs sensitivity correction of the first photo detector relative to an illuminance on a plane corresponding to a surface of the substrate in accordance with the estimated change of transmittance (see col.6, lines 20-34); a reticle stage (9) for holding and driving the reticle in a direction perpendicular with the optical axis of the illumination optical system ; a second photo

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detector (13) having a light receiving surface placed at the height of the substrate for detecting the exposure light passing thru a light transmittance portion the reticle stage; an ND filter (20) and a masking plate (6)

With regard to claim 6 , Takahashi teaches and the processing system (102-103) determines the changes in the transmissance of the illuminating system and the projection optical system based on the detection signals from the photodetectors 12 and 13 and changes a proportional coefficient of a target value of an output of the photodetector (12) and the voltage applied to the light source in accordance with a change of transmittance in the optical path from the light source to the photodetector (12) of at least an optical element. . Takahashi et al's 573 further teaches correcting light quantity error due to variation with time of the optical components, output signals from the first photodetector 12 applied to the light quantity calculating means 102 and control system 103 to calculate a correction coefficient and adjust the voltage applied to the light source (see col.5, lines 62-67 and col.13, lines 46-51).

Allowable Subject Matter

2. Claims 14 and 17 are allowed since Applicant's arguments with respect to the patentability of these claims are deemed persuasive (see page 15 lines 7 thru page 17).

Response to Amendment/Arguments

3. Applicant's amendment filed July 14, 2003 have been entered. Claims 1, 8, 12 have been amended. Claim 17 has been added. Claims 15-16 have been cancelled. As to claims 1-13, Applicant's arguments with respect to the prior art have been carefully reviewed but they are not

found to be persuasive. Applicants argued that Takahashi et al'573 only considers the transmissivity of the illumination optical system from the half mirror (5) (the point at which the first detector (12) is placed) to the wafer. Therefore, Takahashi fails to disclose or suggest "a change of transmittance in an optical path from said light source to said photodetector of at least an optical element". The Examiner respectfully disagrees with applicant since Takahashi's 573 meets all of the limitations as claimed. As clearly illustrated from figure 1 of Takahashi, photodetector (12) is placed between the light source (1) and mirror (8) for receiving the light from an optical path between the light source and a portion where the reticle/original (R) is placed, the photodetector (12) monitors an emission of light from the light source (see col.4, lines 43-48) thru the illumination optical system (100). Since the illumination optical system (100) comprises the optical elements 2-8 and 20-21, it is understood that the optical elements preceding photodetector 12 are optical elements through which exposure light passes. If changes in transmittance of optical elements preceding photodetector 12 occurs (for example, "at least of condenser 4 or mirror 5), the exposure amount reaching photodetector 12 changes and a change in the transmissivity of the illumination optical system (100) (for example, caused by the mirror (5) or lens 4) is "a change of transmittance of at least an optical element from the light source (1) to the first detector (12) as claimed.

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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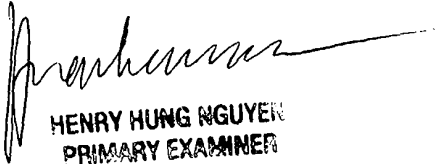
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

hvn
9/27/03



HENRY HUNG NGUYEN
PRIMARY EXAMINER